

***FlyBy Math™* Alignment**  
**Illinois Learning Standards**  
**Stage E- Grades 4, 5 & 6- Mathematics**

**State Goal 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.**

**C. Select and use appropriate technology, instruments and formulas to solve problems, interpret results and communicate findings.**

*7.C.2a Describe relationships in a simple scale drawing.*

Descriptor	<b><i>FlyBy Math™</i> Activities</b>
1. Select appropriate tools to measure, draw, or construct figures.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

**State Goal 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results.**

**B. Interpret and describe numerical relationships using tables, graphs, and symbols. (Connections of representations including the rate of change)**

*8.B.2 Analyze a geometric pattern and express the results numerically.*

Descriptor	<b><i>FlyBy Math™</i> Activities</b>
1. Model problem situations with objects and equations to draw conclusions.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.  --Predict outcomes and explain results of mathematical models and experiments.
2. Represent and analyze patterns and functions using words, tables, and graphs.	--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.  --Use tables, bar graphs, line graphs, equations, and a Cartesian coordinate system to draw conclusions.
3. Demonstrate how the change in one quantity affects the other in a functional relationship involving whole numbers and unit fractions.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
4. Identify, describe, and compare situations with constant and varying rates of change using words, tables, and graphs (e.g., two quantities that vary together are the length of the side of a square and its area).	--Compare airspace scenarios for both the same and different starting conditions and the same and different rates.

**State Goal 9: Use geometric methods to analyze, categorize and draw conclusions about points, lines, planes and space.**

**A. Demonstrate and apply geometric concepts involving points, lines, planes, and space. (Properties of single figures, coordinate geometry and constructions)**

*9.A.2c Describe and draw representations of geometric relationships, patterns, symmetries, and designs in two- and three-dimensions with and without technology.*

<b>Descriptor</b>	<b><i>FlyBy Math™</i> Activities</b>
4. Describe paths using coordinate systems.	<p>--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p>
5. Determine the distance between points along horizontal and vertical lines of a coordinate system.	--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

**State Goal 10: Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.**

**A. Organize, describe and make predictions from existing data. (Data analysis)**

*10.A.2a Organize and display data using pictures, tallies, tables, charts, bar graphs, line graphs, line plots and stem-and-leaf graphs.*

<b>Descriptor</b>	<b><i>FlyBy Math™</i> Activities</b>
1. Represent given data using double bar graphs, double line graphs, and stem and leaf plots with and without technology.	<p>--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, equations, and a Cartesian coordinate system to draw conclusions.</p>
2. Select an appropriate graph format to display given data.	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

*10.A.2c Make predictions and decisions based on data and communicate their reasoning.*

<b>Descriptor</b>	<b><i>FlyBy Math™</i> Activities</b>
3. Read, interpret, infer, predict, draw conclusions, and evaluate data from any graph.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

**B. Formulate questions, design data collection methods, gather and analyze data and communicate findings. (Data Collection)**

*10.B.2b Collect, organize and display data using tables, charts, bar graphs, line graphs, circle graphs, line plots and stem-and-leaf graphs.*

<b>Descriptor</b>	<b><i>FlyBy Math™</i> Activities</b>
1. Design investigations to address a question and consider how data-collection methods affect the nature of a data set.	Conduct simulation and measurement for several aircraft conflict problems.

*10.B.2d Interpret results or make relevant decisions based on the data gathered.*

<b>Descriptor</b>	<b><i>FlyBy Math™</i> Activities</b>
2. Propose and justify conclusions and predictions that are based on data, and design studies to further investigate the conclusions or predictions.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.